ORDER NO. 91-094

WASTE DISCHARGE REQUIREMENTS FOR:

EXXON COMPANY, U.S.A.
BENICIA REFINERY
SOLANO COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. Exxon Corporation, (hereinafter Exxon or the discharger), owns and operates a petroleum refinery and marketing terminal located at Benicia, Solano County as shown in Figure 1.

2. The refinery produces hydrocarbon products, by-products, and intermediates and is classified as a cracking refinery as defined by U.S. Environmental Protection Agency in 40 CFR 419.20. Current daily crude throughput consists of approximately 135,000 barrels of oil per day. The refinery began operations in 1969.

3. The facility discharges approximately 2.5 million gallons per day (MGD) of treated process wastewater into Carquinez Strait. The discharge is currently regulated by Board Order No. 90-096, NPDES Permit No. CA0005550, adopted June 20, 1990. Process wastewater and contaminated stormwater runoff are treated at the on-site wastewater treatment plant. The treatment process consists of Corrugate Plate (CPS0) oil/water separators, induced static floatation (ISF) units an activated sludge unit with addition of powdered activated carbon, and a secondary clarifier. The CPS/ISF units replace the original refinery gravity oil/water separator and DAF unit.

4. The Board adopted Waste Discharge Requirements, Order No. 77-132, on October 18, 1977. This Order establishes construction standards for an emergency retention pond for treated waste water.

5. The following Waste Management Units have been identified:

   Waste Water Treatment Ponds: Final Pond
   Crude Field Retention Pond

   The Retention Pond and the Equalization Pond were taken out of service for wastewater treatment and will be used for storage of stormwater. The remaining units require further characterization as required by this Order to determine the applicability of Chapter 15, and the appropriate classification.

6. The Wastewater Treatment Ponds (WWTP) are located southwest of the main refinery site. The Crude Field Retention Pond (CFRP) is located due south of the main refinery site, and the Park Road parcel is located southeast of the refinery adjacent to Sulfur Springs Creek. Interstate 680 and other public roadways separate the WWTP from the CFRP and the main refinery. The main refinery occupies roughly 330 acres, while the WWTP and the CFRP cover 20 and 14 acres respectively.

7. The discharger submitted a Report of Waste Discharge (ROWD) on June 8, 1988. Two pond systems were included in the ROWD: the Wastewater Treatment Ponds (WWTP) and the Crude Field Retention Pond (CFRP).

8. The WWTP consists of the following individual surface impoundments:

   a. The Retention Pond, which has a capacity of about 5.0 million gallons (MG), received oily wastewater and surface water runoff from the oily waste sewer. The pond was converted in May 1991 for use as a stormwater retention pond to receive influent during periods of stormwater runoff for diversion to the new treatment facilities.

   b. The Equalization Pond received waste water from the chemical sewer prior to May 1991. The pond stopped receiving dry weather flows at that time and is presently used only as a stormwater retention pond. The capacity of the pond is approximately 1.5 MG.

   c. The Final Pond received a mixture of wastewaters from the previous ponds via the activated sludge unit. This basin has a capacity of approximately 8.4 MG. Organic compounds have been detected in the soil beneath the basin. Discharge from this impoundment is regulated by NPDES permit CA0005550. If pond wastewater does not achieve effluent limitations specified in the permit, it is pumped to the Crude Field Retention pond (CFRP) and stored until it can be reprocessed.

   The embankments of these ponds consist of compacted fill material. The underlying materials consist mainly of Bay Mud deposits. Sediments and water contained in the ponds were sampled and analyzed and were not found to contain hazardous wastes according to Department of Health Services (DHS) criteria. Therefore, they are not subject to the Toxic Pits Cleanup Act of 1984.

9. The CFRP, located in the Crude Tank Field area is regulated by Board Order 77-132. The pond was built in 1977 on a

hilltop (approximate elevation 160 ft. MSL) south of the main refinery site and roughly 2000 feet southwest of the WWTP and covers roughly 14 acres. The hilltop had been modified extensively by cutting and filling of existing topography. Part of the area presently occupied by the pond is reported to have been used initially as a landfarm for disposal of bio-sludges. The pond is designed to receive and temporarily store effluent from the WWTP when effluent limitations prescribed in the facility's NPDES permit are exceeded. The total capacity of the pond is 23 MG.

10. The ROWD does not present adequate or sufficient data to assess if operation of the CFRP has impacted the underlying soils, or permitted migration of contaminants in groundwaters. Further investigations are necessary to accurately determine ground water gradients, possible ground water contamination, and migration pathways. All wells with some minor exceptions are located on the impoundment berm and do not show local groundwater flow directions.

11 The ROWD fails to identify the upper unconfined aquifer and does not furnish credible water quality data. Groundwater samples were analyzed for volatile and semi-volatile organic compounds and CAM metals but not for total petroleum hydrocarbons (TPH) or oil and grease.

12. Both volatile organics and CAM metals are present in sludges of the WWTP. Xylene was found in soils 5 foot below the pond bottom. No logs have been presented for monitoring wells B-1 through B-9. No screen slot size, length of screened interval or well development data is available for these wells. All wells, regardless of depth of completion, were utilized for drawing piezometric surface maps.

13. Concentrations of volatile organics were generally highest in the Retention Pond water while semi-volatile organic concentrations were highest in the Equalization Pond. Soil samples from beneath the ponds were not analyzed for TPH and oil and grease. Analyses of pond bottom soils from the WWTP show that no attenuation of organic constituents occurs with depth.

14. Data presented in the ROWD do not clearly show that soils beneath the Equalization Pond have not been impacted by organic volatiles. Further investigations are required to determine if such contamination is present. The apparent presence of toluene and xylene in soils beneath the Retention pond must be further investigated.

15. Despite the proximity of Sulfur Springs Slough and Sulfur Springs Creek to the WWTP, the impact of these impoundments on the slough and creek has not been determined.

16. Excavated Soils and Waste Disposal Areas
The Burma Road soil and waste disposal area covering approximately 1.8 acres, partially within a ravine, is present near the western limits of the refinery. The site is inadequately characterized and no groundwater monitoring wells have been installed to determine if contaminants, including heavy metals are entering the ground water. A trench was dug reportedly in 1973, at the Crude Tank Farm for disposal of tank bottom sludges. The area must be further investigated.

Soil Stockpiles

17. Several contaminated soil stockpiles have been reported to be present on site. No information is available regarding the contamination of the stockpiled soils and their potential groundwater impact. Data on soil placement or treatment of the soil stockpiles has not been presented and must be furnished.

18. Landfarm
A 3 acre landfarm is reported to have pre-existed in part of the area presently occupied by the Crude Field Retention pond. The landfarm reportedly was used for disposal of bio-sludges. Subsurface investigations must be made beneath the Crude Field Retention pond and of the pond bottom soils to determine if any wastes remain in place.

19. Hydrocarbon Leaks and Spills
Reference to hydrocarbon contamination in soil and water presently not investigated or incompletely investigated is made in several reports. Investigations regarding the vertical and horizontal extent of contamination in soils and dissolved hydrocarbons in groundwater are needed.

Further soil and groundwater investigations must be performed in the area of the former location of the Laboratory Underground Storage Tank. Soils in the vicinity of the Exxon Marketing Terminal are reported to be contaminated by hydrocarbons and must be investigated for horizontal and vertical extent. Ground water monitoring is required at these locations.

20. The discharger reported 50 above ground spills, one tank leak and several tank overfillings as well as several pipeline leaks ranging in magnitude from unknown quantities and/or insignificant to 1,000 barrels of hydrocarbons. Six known underground pipeline leaks also have been reported. Little information is presently available regarding soil

cleanup or groundwater monitoring activities at these sites.

21. Perimeter Monitoring System
The discharger has proposed to perform a perimeter groundwater monitoring program along the southeast boundary of the refinery including the Park Road parcel. A total of 31 wells were installed in 1975, but no groundwater analytic data has been presented. Soil borings on the Park Road parcel showed the presence of contaminated soil, but failed to determine the horizontal and vertical extent of soil contamination. Lack of soil boring and monitoring well data requires that further investigations be conducted.

22. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. This Order implements the water quality objectives stated in the Basin Plan.

23. The existing and potential beneficial uses of Suisun Bay and Carquinez Strait in the vicinity of the site are:

    a. Industrial service supply
    b. Navigation
    c. Commercial and sport fishing
    d. Contact and non-contact water recreation
    e. Wildlife and estuarine habitat
    f. Fish migration and spawning
    g. Preservation of rare and endangered species

24. The existing and potential beneficial uses of groundwater in the vicinity of the site are:

    a. Industrial service supply
    b. Domestic water supply

25. The action to issue Waste Discharge Requirements for continued operation of existing waste management units is exempt from the California Environmental Quality Act (Public Resources Section 2100 et. seq.) in accordance with Section 15301, Chapter 3, Title 14 of the California Code of Regulations.

26. The Board notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

27. The Board in a public hearing heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that Exxon Company, U.S.A., Benicia Refinery, its agents, successors and assigns in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The treatment, discharge or storage of wastes or materials which may impact the beneficial uses of ground and surface water shall not be allowed to create a condition of pollution or nuisance as defined in Sections 13050 (1) (m), of the California Water Code.

2. Migration of pollutants through subsurface transport to waters of the State is prohibited.

3. There shall be no discharge of wastes to surface waters except as permitted under the National Pollutant Discharge Elimination System (NPDES).

B. Specifications

Unless otherwise noted, any references to Sections and Articles refer to Title 23, Chapter 15 of the California Code of Regulations.

All of the Waste Management Units listed in this Order are subject to this Order.

The following Specifications apply as set forth in the Provisions:

1. General Specifications

a. During waste disposal, handling, or treatment, no wastes shall be placed in a position where they can be carried into the waters of the State.

b. The waste management units shall prevent migration of wastes to adjacent geologic materials, groundwater, or surface water, throughout the operation, closure, and post closure periods.

c. The integrity of containment structures shall be maintained at all times.

2. Specifications for Operating Waste Management Units

a. The containment structures for the units shall have a foundation or base capable of providing support for the structures and be capable of

withstanding hydraulic pressure gradients to prevent failure due to settlement, compression, or uplift.

b. Pond dikes shall be capable of retaining impounded liquids in the event of a major earthquake. A pond slope stability analysis under seismic loading conditions shall be performed as set forth in Chapter 15. The analysis must include a determination of the maximum credible earthquake (MCE) and its associated peak ground acceleration (PGA).

c. The Crude Field Retention Pond shall be in use only for temporary diversion of treated water not meeting NPDES quality requirements or during periods of upset, maintenance or breakdown.

3. Soil and Groundwater Sampling and Monitoring Specifications

a. The groundwater monitoring program shall be in compliance with Sections 2555 (b) through (g), and as approved by the Executive Officer.

b. The discharger shall conduct monitoring activities on a quarterly basis, to determine the extent of contamination of the upper unconfined aquifer and deeper zones if contamination is found in the upper aquifer and establish depth to water. Exxon shall determine the possible interconnection between water bearing zones and determine the extent of both groundwater and soil contamination.

c. The discharger shall install groundwater monitoring wells to determine if groundwater contamination has occurred from known or suspected areas of contamination; the soil and waste disposal areas, the landfarm, from tank, pipeline and/or surface and subsurface leaks or spills. The vertical and horizontal extent of soil contamination must be determined in areas of known or suspected leaks and spills. Groundwater monitoring must also be carried out at locations of underground tank removal where contaminated soil was or is present.

d. The discharger shall conduct detailed investigations of pond sludges, determine their thickness and investigate the contamination present in soils underlying the impoundments.

e. The discharger shall properly close and abandon wells not suitable for monitoring purposes, serving as possible interconnecting pathways between water bearing zones, or for wells for which detailed lithologic logs are not available.

f. Both the work plan and final technical reports shall give detailed information regarding the design of each well: the drilling technique being employed, type of equipment, bore hole diameter, method of determining filter pack and screen slot size, length and size, method of sample selection, details of well development, rationale for bore hole and well location, thickness and method of placement of the bentonite seal, proposed bore hole depth, material and method of placement of backfill or annulus seal.

g. The groundwater sampling and analysis program shall ensure that groundwater quality data are representative of the groundwater in the area of the waste management unit and comply with Section 2555 (e) through (g) of Article 5.

h. Water quality protection standards will be established by the Board according to the conditions outlined in section 2552. These standards shall be generated upon submittal of an approved groundwater quality monitoring program and based upon one year of background groundwater quality monitoring data collected at each waste management unit.

i. A detection monitoring program, as required in Section 2556, shall be implemented at each soil contamination site where groundwater contamination is believed to occur and at the WWTP and the CFRP.

j. A verification monitoring program, as required in Section 2556 and 2557, shall be implemented at units where water quality impairment has occurred, or upon determination that a statistically significant increase in indicator parameters or waste constituents has occurred during detection monitoring at a waste management unit or group of units.

C. Provisions

Unless otherwise noted, any references to Sections and Articles refer to Title 23, Chapter 15 of the California Code of Regulations.

1. The discharger shall comply with Prohibitions A.1 through A.3 immediately upon adoption of this Order.

2. The discharger shall comply with the Specifications above according to the following time schedule:

   a. The discharger shall submit no later than September 30, 1991, a Sampling and Analysis plan acceptable to the Executive Officer, as part of the work plan as specified below. .

   b. Leaks and Spills

      The discharger shall submit a detailed work plan addressing the deficiencies of investigation relating to hydrocarbon spills, leaks and contamination of unknown origin which has occurred on site. The investigations shall address deficiencies of previous investigations and lack of adequate data developed in areas discussed in the Findings. Groundwater monitoring wells must be installed both up and down-gradient of areas of known or suspected soil contamination including areas of soil excavation where ground water quality is at risk, based on soil sampling and boring data. Soils investigations shall be performed in all areas of known or suspected contamination to determine the horizontal and vertical extent of contamination. The final technical report must contain several remedial alternatives including no action, for cleanup.

   c. Landfarm, Soil Stockpiles and Disposal Areas

      Additional soil investigations must be performed at the soil disposal areas and at the landfarm. These investigations must include ground water monitoring where analytic data from soil borings indicate the presence of contamination which may impact groundwater. Analytic investigations of soil stockpiles must be performed and proposals submitted for the disposition of contaminated soils.

      Both up and down gradient groundwater monitoring wells must be installed at appropriate depth to monitor migration pathways at the Crude Field Retention pond if soil contamination is found to exist at the Landfarm, reputed to be present beneath the pond. The final technical report must

present several alternative proposals for proper closure of these sites.

d. Wastewater Treatment Ponds

(1) The discharger shall submit a work plan for the installation of additional monitoring wells and soil borings to determine if waste migration has or is occurring from the WWTP. The Retention and Equalization ponds have been removed from service, except for use as storm water retention ponds. The discharger must submit verification of removal of all sludges and contaminated soils previous to usage as storm water retention ponds. Data to determine the groundwater gradient and flow paths must be developed for all ponds together with information on soil contamination in the vicinity of the waste water treatment ponds. Adequate rationale for the proposed boring and well locations, well design, drilling methods, soil and water sampling methodology, well installation, completion methods and development procedures must be furnished. Sludge thickness and analyses must be reported. Address all deficiencies detailed in the Findings.

(2) Detailed descriptions of analytic methods to be used for water, soil and sludge analyses must be included in the proposal and final technical reports.

(3) The work plan must include proposed methods and locations to establish background sampling and a monitoring program for Sulfur Springs Slough and Sulfur Springs Creek to assess the impact of the WWTP on these waters.

e. Crude Field Retention Pond

(1) Submit a work plan of expanded investigations of the extent of soil and groundwater contamination and determine the groundwater gradient for the entire pond area. Furnish data and the rationale on proposed locations for soil sampling and ground water monitoring wells. Address all deficiencies detailed in the Findings.

(2) Detail within the proposal methods for proper abandonment and replacement of wells G-1 and G-2, which could serve as pathways for migration of contaminants. Furnish adequate rationale for

placement of replacement wells to monitor possible contaminant pathways

f. The known or suspected contamination sites have been divided in the Work Plan into priority areas of investigation, based on hydrogeologic/geologic data, source characterization. and potential threat to ground or surface waters. The order of priorities is as follows:

| Priority | Area Description |
|---|---|
| 1 | Waste Water Treatment Ponds |
| 2 | Marketing Terminal |
| 3 | Park Road Parcel |
| 4 | Slop Oil Storage Area |
| 5 | Upper Level Storage Tanks -Intermediate Hydrocarbon |
| 6 | Crude Oil Tank Farm |
| 7 | Upper Level Storage Tanks - Light End Hydrocarbons |
| 8 | Lower Level Storage Tanks |
| 9 | Refinery Process Area |
| 10 | Burma Road Stockpile |
| 11 | Laboratory Sump Area |
| 12 | Gate 5 Stockpile |

g. THE DISCHARGER SHALL SUBMIT a detailed technical work plan, acceptable to the Executive Officer, detailing work to be performed as discussed in C.2.a. through f., no later than September 30, 1991.

h. THE DISCHARGER SHALL SUBMIT a detailed technical report acceptable to the Executive Officer documenting completion of work in priority areas 1 through 3, in accordance with an approved workplan, no later than March 30, 1992.

i. THE DISCHARGER SHALL SUBMIT a detailed technical report, acceptable to the Executive Officer, documenting completion of work in priority areas 4 through 7 no later than September 30, 1992, in accordance with an approved work plan.

j. THE DISCHARGER SHALL SUBMIT a detailed technical report of investigations acceptable to the Executive Officer, documenting completion of work performed in priority areas 8 through 12, and other areas discussed in the findings, no later than April 30, 1993.

k. The discharger shall keep and maintain accurate and complete reports of all leaks, spills, overfilling, pipeline breaks and ruptures which have or may in future occur. The reports must include accurate and detailed information on estimated quantities of spilled fuels, remedial measures undertaken and/or results of ground water monitoring and soil sampling.

3. Monitoring reports shall be submitted quarterly to the Board on the 15th of the second month following the end of the quarter. The report shall cover the previous quarter. On a quarterly basis thereafter, the reports shall include:

a) a summary of work performed since the previous report;
b) a presentation of updated piezometric surface and water table maps for all affected water bearing zones;
c) plan view maps showing the location of all monitoring wells and/or piezometers, at a scalable size.
d. Soil and groundwater analytic data

4. All samples shall be analyzed by State certified laboratories using appropriate EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

5. Copies of all correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications and Provisions of this Order shall be provided to the following agencies:

a. Department of Health Services, Toxic Substances Control Division.

6. The discharger shall permit the Board or its authorized representative, in accordance to Section 13267 (c) of the California Water Code:

a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any records are kept, which are relevant to this Order.

b. Access to copy any records required to be kept under the terms and conditions of this Order.

c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

7. The discharger shall file with the Regional Board a report of any material change in the character, location, or quantity of waste discharge. For the purpose of these requirements, this includes any proposed change in boundaries, contours or ownership.

8. The discharger shall maintain a copy of this Order at the site so as to be available at all times to site operating personnel.

9. The discharger shall notify the Board if soil contamination is identified during subsurface investigations conducted on the refinery site which may potentially have an adverse impact on ground or surface waters.

10. The Board considers the property owner and site operator to have a continuing responsibility for correcting any problems within their reasonable control which arise in the future as a result of this Waste Discharge Order.

11. These requirements do not authorize the commission of any act causing injury to the property of another or of the public, do not convey any property rights, do not remove liability under federal, state or local laws, and do not authorize discharge of waste without the appropriate federal, state or local permits, authorizations, or determinations.

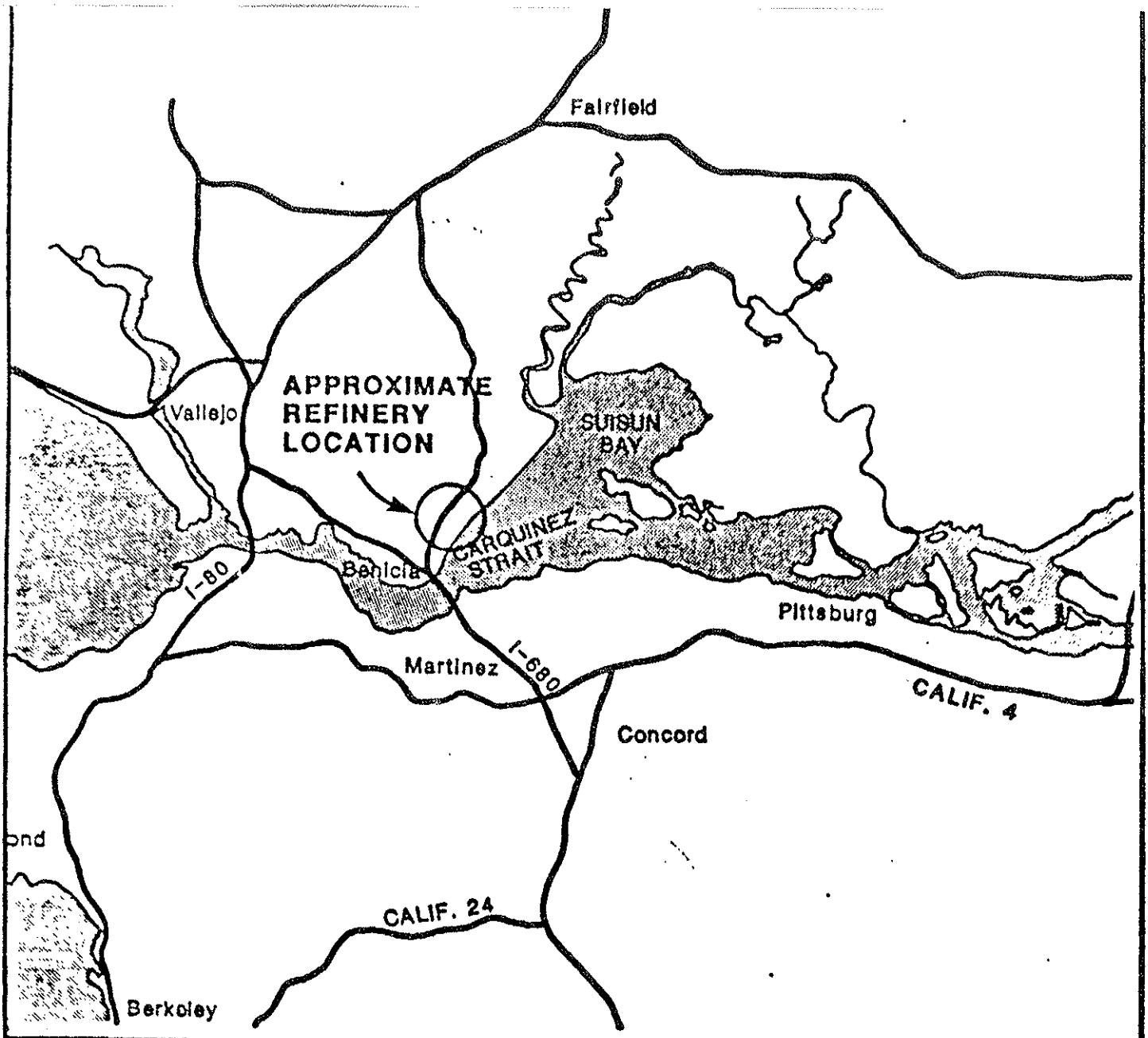
12. The Board will review this Order periodically and may revise the requirements when necessary.

13. Board Order 77-132 is hereby rescinded.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on June 19, 1991.

STEVEN R. RITCHIE
Executive Officer

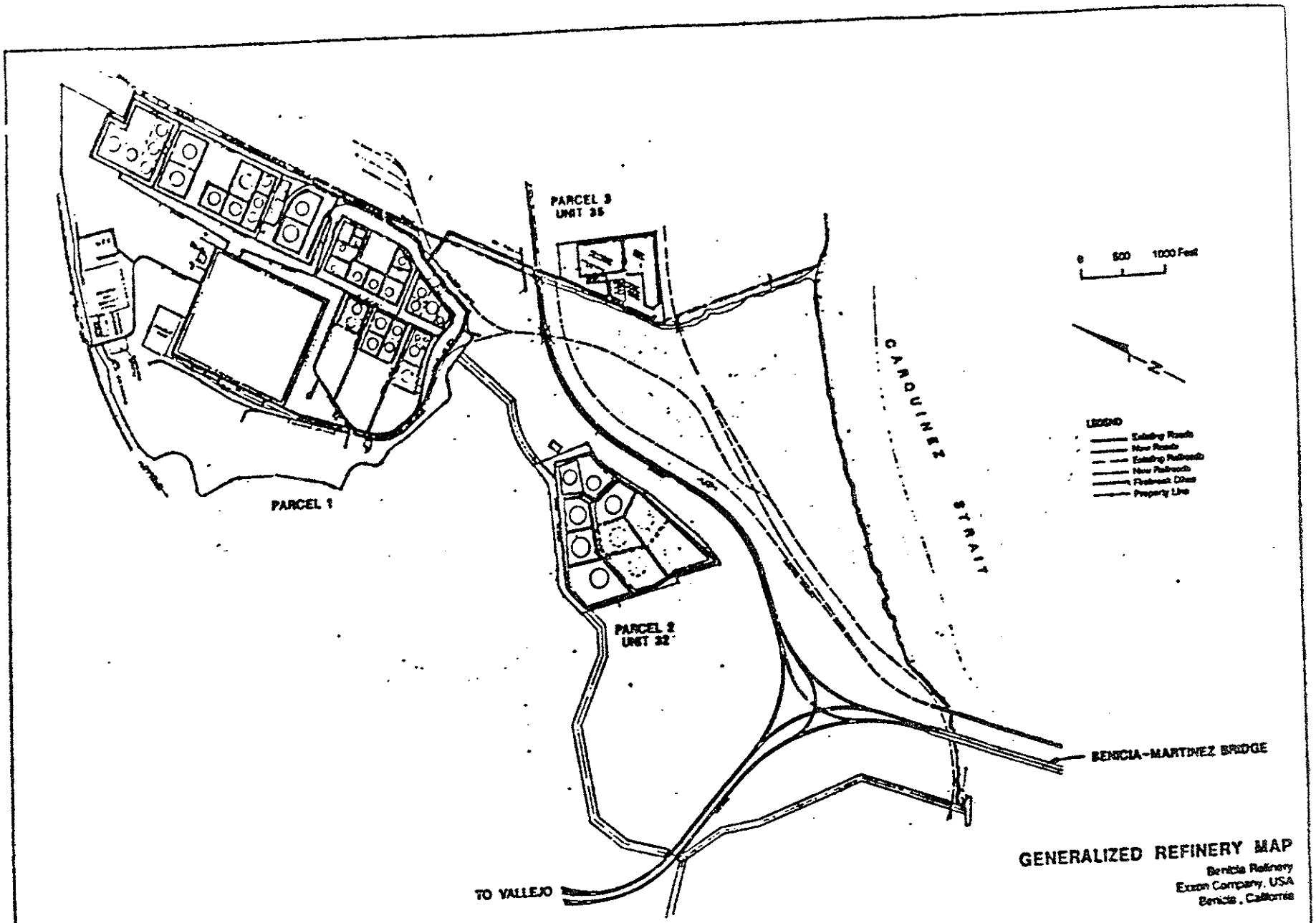
Attachments:
Figure 1: Location map
Figure 2: Map of Active Waste Management Units.




## VICINITY MAP

Benicia Refinery
Exxon Company, USA
Benicia, California

PLATE 1




GENERALIZED REFINERY MAP

Benicia Refinery
Exxon Company, USA
Benicia, California

Reference: From Exxon Company, USA
Drawing Number 2922-133-CD-1

PLATE -2

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

# SELF-MONITORING PROGRAM

FOR

EXXON COMPANY, U.S.A.

3400 EAST SECOND STREET

BENICIA, SOLANO COUNTY

WASTE DISCHARGE REQUIREMENTS

ORDER NO. 91-094

CONSISTS OF

PART A

AND

PART B

PART A

A. General

1. Reporting responsibilities of waste dischargers are specified in Sections 13225 (a), 13267 (b), 13383, and 13387 (b) of the California Water Code and this Regional Board's Resolution No. 73-16.

2. The principal purposes of a self-monitoring program by a waste discharger are the following:

   a. To document compliance with waste discharge requirements and prohibitions established by the Board;

   b. To facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge;

   c. To develop or assist in the development of effluent standards of performance, pretreatment and toxicity standards, other standards; and,

   d. To prepare water and water quality inventories.

B. Sampling and Analytical Methods

1. Sample collection, storage, and analyses shall be performed according to the most recent version of Standard Methods for the Analysis of Wastewater, and Test Methods for Evaluating Solid Waste EPA Document SW-846, or other EPA approved methods and in accordance with an approved sampling and analysis plan.

2. Water and waste analysis (except total suspended solids) shall be performed by a laboratory approved for these analyses by the State Department of Health. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to this Regional Board.

3. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

4. The discharger must furnish both the extraction and analytic methods to be used utilized.

C. Definition of Terms

1. A grab sample is a discrete sample collected at any time.
2. Duly authorized representative is either a named individual or any individual occupying a named position such as the following:

   a. Authorization is made in writing by a principal executive officer, or,

   b. Authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as general partner in a partnership, sole proprietorship, the position of plant manager, operator of a well or well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company.

D. Schedule of Sampling, Analysis, and Observations

1. The discharger is required to perform sampling, analysis, and observations according to the schedule specified in Part B, and the requirements of Chapter 15.

2. A statistical analysis shall be performed to determine if the difference between the mean of each sample set and the water quality protection standard is significant and shall be reported annually as described in the current revision of Appendix II of Chapter 15. The discharger may propose an alternative statistical procedure to be used in making this determination pursuant to Section 2555(h) of Chapter 15.

E. Records to be Maintained by the Discharger

1. Written reports shall be maintained by the discharger for groundwater monitoring and wastewater sampling, and shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board. Such records shall show the following for each sample.

   a. Identity of sample and sample station number;
   b. Date and time of sampling;
   c. Method of composite sampling (See Section C-

Definition of Terms);

d. Date and time that analyses are started and completed, and name of the personnel performing the analyses;
e. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used. A reference to a specific section of a reference required in Part A Section B is satisfactory.
f. Calculation of results;
g. Results of analyses, and detection limits for each analysis; and,
h. Chain of custody forms for each sample.

F. Reports to be Filed With The Board

1. Written self-monitoring reports shall be filed quarterly except for surface water discharge monitoring which shall be monthly. For quarterly groundwater monitoring reports, written reports shall be filed regularly each 3 months, with the first report due on July 15, 1992. In addition an annual report shall be filed as indicated in G.3. The reports shall be comprised of the following:

a. Letter of transmittal - A letter transmitting the essential points in each self-monitoring report should accompany each report. Such a letter shall include a discussion of any requirement violations found during the last reporting period, and actions taken or planned for correcting the violations, such as, operation and/or facilities modifications. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred in the last report period this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct. The letter shall contain the following certification:

"I certify under penalty of law that this document

and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

b. Each monitoring report shall include a compliance evaluation summary sheet. Until the Order is amended to specify groundwater protection standards, the following shall apply and the compliance sheet shall contain:

(1) The method and time of water level measurement, the type of pump used for purging, pump placement in well, method of purging, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity during purging, calibration of the field equipment, results of the pH, temperature, conductivity and turbidity testing, well recovery time, and method of disposing of the purge water; and,

(2) Type of pump used, pump placement for sampling, a detailed description of the sampling procedure; number and description of equipment, field and travel blanks; number and description of duplicate samples; type of sample containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking samples, and any other observations; the chain of custody record.

c. A summary of the status of any remediation work performed during that quarter. This shall be a brief and concise summary of the work initiated and complected as follows:

(1) As interim corrective action measures; and
(2) To define the extent and rate of migrations of waste constituents in the soil and groundwater at the site.

d. The discharger shall describe, in the quarterly report, the reasons for significant increases in

pollutant concentration at a well onsite. The description shall include the following:

(1) The source of the increase;
(2) How the discharger determined or will investigate the source of the increase; and,
(3) What source removal measures have been completed or will be proposed.

e. On a quarterly basis a map or aerial photograph showing observation monitoring station locations, and chemical isoconcentration maps to assist in defining contaminant distribution in the uppermost and/or deeper aquifer, as appropriate, together with a piezometric surface map shall be included as part of the quarterly Self Monitoring Report.

f. Laboratory statements of results of analyses specified in Part B must be included in each report. The director of the laboratory whose name appears on the laboratory certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Board. The following information shall be provided.

(1) The method of sample preparation, analyses and detection limits must be appropriate for the expected concentrations. Specific methods of analyses must be identified. If methods other than EPA approved methods or Standard Methods are used, the exact methodology must be submitted for review; and,
(2) In addition to the results of analyses, laboratory quality control/quality assurance (QA/QC) information must be included in the monitoring report. The laboratory QA/QC information should include the method, equipment and analytical detection limits; the recovery rates; an explanation for any recovery rate that is less than 80%; the results of equipment and method blanks; the results of spiked and surrogate samples; the frequency of quality control analysis; and the name and qualifications of the person(s) performing the analyses.

g. By March 31 of each year the discharger shall submit an annual report to the Board covering the previous calendar year. This report shall contain:

(1) Tabular and graphical summaries of the

monitoring data obtained during the previous year;
(2) A comprehensive discussion of the compliance record, and the corrective actions taken or planned which may be needed to bring the discharger into full compliance with the waste discharge requirements; and,
(3) A written summary of the groundwater analyses indicating any change in the quality of the groundwater.

h. In the event the discharger violates or threatens to violate the conditions of the waste discharge requirements and prohibitions due to:

   a. Accidents caused by human negligence or error, or,
   b. Other causes such as acts of nature.

The discharger shall notify the Regional Board office by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within 7 working days of the telephone notification. The written report shall include time and date, duration and estimated volume of waste bypassed, method used in estimating volume and person notified of the incident. The report shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to prevent the problem from recurring.

PART B

A. Description of Observation Stations and Schedule of Observations

1. The observation stations shall consist of the ground water monitoring wells. No less than one upgradient and two downgradient wells shall be installed for the uppermost or potentially affected deeper groundwater aquifer at the points of compliance of for each waste management area.

2. The observation stations of the Waste Water Treatment System and the Crude Field Retention Pond shall consist of soil borings in the vicinity of and beneath the impoundments. Sludge samples must be collected and analyzed annually.

3. An adequate number of monitoring wells shall be installed in the vicinity of the Waste Water Treatment impoundments and the Crude Field retention pond to define and monitor each water bearing zone within the area and determine ground water gradient and water quality.

4. The schedule of observations and grab sampling shall be quarterly and results shall be reported in the months of January, April, July and October, as per Provisions, section C.3.

5. All ground water monitoring well locations shall be surveyed with an accuracy of 0.1 inches both horizontally for location and vertically both at the ground surface and at a marked location at the top of the casing for water level measurement. All water level elevations shall be reported in relation to Mean Sea Level.

B. Observation and Test Procedures

1. The observations shall consist of the following:

   a. Water level elevation reported to the nearest 0.1 inch for both depth to water from the ground surface and elevation of the ground water level;

   b. Groundwater temperature measured at the time of sampling and reported in degrees fahrenheit;

   c. Groundwater conductivity measured at the time of sampling as per Standard Methods 205 using potentiometric methodology;

   d. Ground water pH measured at the time of sampling as per Standard Methods 423 using potentiometric methodology;

   e. Ground water turbidity measured at the time of sampling;

   f. The discharger shall monitor the surface water of Sulfur

Creek and Sulfur Creek Slough both above and below the refinery site.

2. The test procedures for the ground water samples shall consist of the following:

   a. Ground water and/or soil analysis for total petroleum hydrocarbons, semi-volatiles and volatiles together with CAM metals, as appropriate, using EPA methods and/or the most current revised methods approved by EPA or the RWQCB.

   b. In the event of increased or extensive pollutant concentration in ground water or soil samples, a revised monitoring program proposal to assure adequate definition of the extent of contamination of pollutants shall be submitted together with analytic results.

   c. The compliance period for groundwater monitoring shall extend until the waste no longer poses a threat to water quality

Technical Observations and Suggested Criteria

1. Lithologic data from boreholes (both GB- and B- series) is not adequate for subsurface characterization. Long borehole intervals were not continuously cored and logged. Well logs do not present adequate detail for subsurface correlation. Several borings were only partially logged.

2. No native materials shall be used for backfill or sump filling. The filter pack must not extend below the base of the screen or more than two feet above the top of the screen. All wells must be screened in the uppermost and, where indicated, in the second permeable intervals. Screen length shall not exceed 10 feet in length, except where free floating hydrocarbon product is present, or upon obtaining concurrence from Board staff. Well screens shall not monitor more than one permeable zone.

3. Boring logs must show the name of the field geologist logging the hole, name of driller, equipment used, bore hole and casing diameter, location and length of screen, filter pack and seal, elevation of measuring point, time of beginning and ending of well installation, static water level, and sample locations and number.

4. Detailed data must be presented on the manner and time of well development. Data on swabbing or surging cycles performed for each well and volumes of water removed during development must be reported together with turbidity reported in NTU's.

5. All reports must include detailed site and piezometric maps and lithologic boring logs; All analytic reports shall be included, together with the requirements of B.3. Analyze for TPH, oil and grease, volatile and semi-volatile hydrocarbons and CAM metals as appropriate. Furnish all relevant data in a clear and logical manner and interpret all data. Furnish several alternative remedial action proposals if waste migration or soil contamination exceeding regulatory limits are found to be present. No soil samples shall be composited.

6. Maps showing the location of soil borings and ground water monitoring wells must be of scalable dimensions. Cross sections showing lithologic detail, location of well screens, filter pack and static water level must be presented in the final report. All monitoring wells and soil borings must be continuously cored and logged in sufficient detail to permit identification of intervals no more than 0.1 foot in thickness.

7. Unsaturated zone monitoring shall be conducted where necessary and feasible and an unsaturated zone is present, as required in Section 2559.

8. Statistical procedures as outlined in Section 2555 (h) shall be used to determine whether the water quality protection standards have been exceeded at any unit.

9. Background metals concentrations in soils must be locally established. The use of mean metals concentrations in soils of the western United States is not acceptable.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self Monitoring Program is as follows:

1. Developed in accordance with the procedures set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in this Board's Order No. 91-094.

2. Effective on the date shown below, and,

3. May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer, or request from the discharger.

Steven R. Ritchie
Executive Officer

6/12/91
Date Ordered